Topic: Long division of polynomials

Question: Find the quotient.

$$\frac{x^2 - 26}{x - 5}$$

Answer choices:

A $x + 5 + \frac{1}{x - 5}$

B $x + 5 - \frac{1}{x + 5}$

C $x + 5 + \frac{1}{x + 5}$

D $x + 5 - \frac{1}{x - 5}$

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Solution: D

$$
\begin{array}{r|l}
 & x+5-\dfrac{1}{x-5} \\
\cline{2-2}
x-5 & x^2+0x-26 \\
 & -\left(x^2-5x\right) \\
\cline{2-2}
 & 5x-26 \\
 & -(5x-25) \\
\cline{2-2}
 & -1
\end{array}
$$

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Topic: Long division of polynomials

Question: Find the quotient.

$$\frac{12x^3 - 11x^2 + 9x + 18}{4x + 3}$$

Answer choices:

A $3x^2 - 5x + 6$

B $3x^2 + 5x + 6$

C $3x^2 + 5x - 6$

D $3x^2 - 5x - 6$

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Solution: A

$$
\begin{array}{r|l}
 & 3x^2 - 5x + 6 \\
\hline
4x + 3 & 12x^3 - 11x^2 + 9x + 18 \\
 & -\left(12x^3 + 9x^2\right) \\
\hline
 & -20x^2 + 9x \\
 & -\left(-20x^2 - 15x\right) \\
\hline
 & 24x + 18 \\
 & -(24x + 18) \\
\hline
 & 0
\end{array}
$$

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